BRIEF COMMUNICATIONS

The ADONIS experience: CD-ROM full-text access to the journal literature in an academic health sciences library

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INTRODUCTION

Electronic access to the full text of articles is an ideal that is turning rapidly into reality. It is estimated that the full text of hundreds of journals will be offered through the World Wide Web in 1996 [1]. With the help of the ADONIS document delivery system, a variation of access to electronic journal literature has become a reality at Creighton University Health Sciences Library/Learning Resources Center (CUHSL) in Omaha, Nebraska. The CUHSL acquired the ADONIS system to enhance the library's holdings and meet the immediate research needs of its users. This paper describes the ADONIS system, its application as a supplement to an existing collection, and the advantages and disadvantages of using an electronic full-text system on CD-ROM.

The CUHSL is a mid-size academic health sciences library. It supports health sciences schools and programs in the fields of dentistry, medicine, nursing, pharmacy, and allied health. Within the School of Nursing is a nurse practitioner program; within the School of Pharmacy and Allied Health are the physical therapy doctorate, occupational therapy, and occupational therapy doctorate programs. The School of Pharmacy offers only the doctoral degree. The CUHSL also serves as the library for Creighton's primary teaching hospital, Saint Joseph Hospital and the Center for Mental Health.

ADONIS is produced by a group of European publishers, although journal titles are available from U.S., Canadian, and Australian publishers. A complete, up-to-date list of publishers is available on the ADONIS home page [2]. Elsevier, Springer, and Blackwell Science were part of the original consortium of publishers and continue to be major shareholders. The ADONIS headquarters is in Amsterdam, The Netherlands, with a North American office in Cambridge, Massachusetts. The system was first described in the journal literature in 1988 [3–10]. The ADONIS home page states that access is provided to the editorial contents (articles, research results, case reports, and letters to the editor) of approximately 740 scientific periodicals in the biomedical, chemical, and pharmaceutical disciplines [11]. The subscription price for the 1996 ADONIS disk set is $22,000.00 (U.S. dollars). By contrast, the cost of subscribing to the print versions of all the journals in the ADONIS system would be $523,912.88 in 1996 dollars.

The CUHSL system was funded by a state tax on smoking. In fiscal year 1993/94 the state of Nebraska implemented legislation to tax cigarettes. A percentage of the revenue generated by this tax was earmarked for each of the state's two medical schools (Creighton University School of Medicine and the University of Nebraska College of Medicine) for cancer research. Some of the cancer research funds were allocated to the CUHSL through 1996 to purchase the ADONIS system software and the hardware necessary to run it. The CUHSL purchased the hardware recommended by the makers of ADONIS. (Minimum hardware requirements are noted on the ADONIS home page.)

The CUHSL began its ADONIS subscription with the 1994 data set. Back data sets, which cost less than the current year's set, are available for 1991 and thereafter. ADONIS delivers one or two CD-ROM disks per week. In 1994, ADONIS sent seventy-eight disks to subscribing institutions; eighty-four disks were sent in 1995. The subscription allows unlimited viewing of articles at one workstation in the library at a time. If articles are printed there is an additional cost to cover the royalty charges to the publisher. The cost of printing an article ranged in 1996 from $1.50 (*Medical Letter*) to $32.00 (some Elsevier and Pergamon titles). The average cost of printing an article ranges from $7.00 to $9.00.

The administrative module of the ADONIS system is password protected, and individual passwords can be customized to allow viewing only. At present, passwords have been issued to CUHSL staff members for printing on behalf of clients. Only the library staff is allowed printing access once a client has identified the article needed. However, clients can view articles at their leisure. As yet, there has been no need for clients to sign up to use the system. Print charges are displayed for each article placed in the print queue before any printing is done. The CUHSL librarians will not print from the ADONIS system if the journal is available in the library in print or microform formats, which are less expensive to reproduce.

The technology that supports ADONIS uses bitmapped images of the full text of the biomedical jour-

nals. The images and text are scanned and stored on CD-ROM disks. Each disk contains approximately 10,000 pages of images, including all photographs and halftones appearing in the original articles. The pages are scanned at a resolution of 300 dots per inch. Each CD-ROM contains an index to the articles included on the same disk. Subscribing institutions can use the indexes as devices for locating articles.

USE OF ADONIS AT CUHSL

The CUHSL implemented the ADONIS system in July 1995. The local availability of ADONIS was advertised through flyers, the library's newsletter, presentations at state library associations, and word of mouth. Titles covered by the ADONIS system were added to the library's online catalog, PALS, as well as the library's local MEDLINE and HealthSTAR databases. In addition, ADONIS titles were added to the CUHSL's SERHOLD* holdings to make these resources available to members of DOCLINE†, an international network of libraries of medicine. Like any new technology, ADONIS required a period of testing and re-testing after installation. The librarians had to learn the process of finding an article, having the jukebox select the appropriate CD-ROM, viewing an article on the monitor, and finally printing the article. The process took some patience. Initially, there were printing problems, which were fixed through the manipulation of printer settings in Windows. Copyright charges were refunded for any unsatisfactory copies. The ADONIS administrative staff has been understanding of set-up and installation errors that resulted in bad prints.

Through September 1996, 393 requests were filled for the library's primary clients, faculty, staff, and students. The CUHSL subsidizes the printing of ADONIS articles for its primary clients at $0.20 per page. Also through September 1996, 1,669 interlibrary loan requests were received from other libraries for ADONIS-only titles. In response, 994 loans were made to the requesting libraries. In the vast majority of cases, unfilled requests were due to the borrowing library's judgment that the costs were too high. Charges for interlibrary loans are the actual ADONIS cost plus a $3.00 handling fee charged by the library. (The CUHSL checks the "OTH" (other) reason in DOCLINE, rather than "CST" (cost not met), for unfilled requests so that the requests can be sent to another library.)

The ADONIS software tracks use of the system by creating a usage file. The statistics program records each article printed in a usage log. The subscriber downloads this file to a floppy disk and sends it to ADONIS every quarter. An invoice for the quarter is sent within a month. In practice, ADONIS does not charge for copies that are bad due to system error. The ADONIS staff has been very liberal and fair in their interpretation of what constitutes a bad copy.

The makers of ADONIS claim a two-week turnaround from receipt of a journal to the dispatch of a full-text CD-ROM from Europe to the subscribing institution. Disks are loaded locally the same day they are received. In 1995 there were some substantial shipping delays because of labor disputes in Europe. With the resolution of these disputes, the ADONIS disks now arrive at a pace of one or more per week.

THE VALUE OF ADONIS TO CUHSL

There are significant gaps in the CUHSL's print collection. ADONIS is a partial solution to this problem. In one sense, ADONIS offers a way of both buying access and owning information. It was the only full-text electronic system available at the time when it was purchased, and the promise of immediate access to 740 biomedical titles was an incentive to purchase the system.

ADONIS, however, is marketed as a document delivery system, not as a replacement for print holdings. Indeed, the publishers continue to publish the ADONIS titles in print. In its present form ADONIS is not an adequate substitute for the printed journal, mostly because of the high cost of printing articles and because the system is not yet installed on a network. The CUHSL planned to test a networked version of ADONIS in 1996. In its present form, ADONIS is just like printed reference resources because the user has to come to the library to view the articles.

The ADONIS system works well for document delivery. The laser prints are superior to high-quality photocopies of a print journal but not as sharp as the original print version. According to library clients, the resolution of the image on the 21-inch monitor used by CUHSL is good, but not as good as that in a high-quality print journal. The system is less useful as an archive because publishers can and do drop and add titles. Although the vast majority of titles are retained from year to year, it is not possible to predict which titles will stay on ADONIS from one year to the next. Each publisher determines whether its titles will be offered on ADONIS. The purchase of a jukebox to house the disks is highly recommended by the makers of ADONIS. This approach eliminates the handling of disks, except during the initial loading of data. The CUHSL opted for a 500-disk changer. This system has saved time and confusion by eliminating the constant

* SERHOLD is a serials database produced by the National Library of Medicine for health sciences libraries. It is the database used for DOCLINE.

† DOCLINE is the online, automated interlibrary loan system created by the National Library of Medicine for health sciences libraries throughout the world.

swapping of disks. It also provides an element of security.

SEARCHING ON ADONIS

A master index provides access to any of the disks that contain data from a search, and this index is updated with each new CD-ROM. The ADONIS search engine is not sophisticated, but a user can employ enough tricks to conduct an effective search. Broad searching by field is possible. The following fields are used:

- ADONIS Number
- Author
- Article Title (keywords can be linked by using Boolean operators)
- Journal Title
- Year
- Volume and Issue Number
- Pages
- Page Range
- ISSN and Supplement

Browsing the index is often more efficient than searching by field. The index is a simple alphabetical list of every field indexed in the ADONIS system. This browser lists all items relevant to the selected fields. For example, if the cursor is in the Author field and the index browser is used, then an alphabetical list of authors is displayed.

Advanced search methods include the use of the asterisk as a wild card. The wild card can be used both before and after the search terms. Boolean operators ("AND", "OR", "NOT") can also be used in the Search Dialogue window. Searching for adjacent words is possible in any of the fields. Search results can be marked for batch printing, and search strategies can be saved for future use.

FUTURE CONSIDERATIONS

Future possibilities for the CUHSL's ADONIS system include making the index a searchable file through the library's home page and exploring the use of ADONIS to provide a table of contents service. The ADONIS disks arrive at about the same time the articles are indexed in MEDLINE, so the system cannot serve as a current awareness tool as does *Current Contents.*

The makers of ADONIS are beta testing a networked version of the product that would allow a subscribing institution to put the full text of the system on the campus network. The CUHSL jukebox can also accommodate two additional CD-ROM drives. These drives, coupled with the two existing drives, would allow four PC stations to be attached to the jukebox to provide greater access than does the current single station. Copyright issues involved in networking ADONIS and the implications of replacing print journals with ADONIS need to be investigated further.

CONCLUSION

ADONIS has proven to be an effective enhancement to the print journal collection of the Creighton University Health Sciences Library/Learning Resources Center. The CUHSL currently subscribes to print versions of 227 of the 740 ADONIS titles. Immediate access to more than 500 additional biomedical journals has been a significant aid to the ability of the library to meet the information needs of its primary customers. The cost of filling the 393 requests received so far from primary clients using ADONIS is less than the cost of requesting the same titles through a rush interlibrary loan process. Taking into consideration the considerable savings in staff time offered by ADONIS, it is clearly more cost-effective to use this system than to use rush interlibrary loan.

Although there are no plans to cancel print serials that are also available on ADONIS, plans could change as the spiraling cost of journals continues to erode the buying power of the CUHSL. In a sense, the purchase of ADONIS meets the need for both ownership and access. It is too soon, however, to judge whether ADONIS is a valuable addition to the CUHSL collection or an expensive alternative to providing immediate access. One of the library's primary goals in 1997 is to justify the use of ADONIS in order to win continued cancer research funding support in the future. If outside funding is not available, then justifying the continued purchase of the product will be difficult unless journal subscriptions are cancelled. There are plans to stop subsidizing the printing of ADONIS articles for primary clients. This change may have some negative impact on ADONIS use because the CUHSL would pass the full copyright charge on to clients.

It remains to be seen whether ADONIS will develop into a true replacement for print journals, because it is not useful as an archive of the journal literature. If the library continues to receive approximately eighty new disks per year, the jukebox will be full in four years. Although the space-saving and disk-handling advantages of a jukebox may be a reality of electronic access, there are other costs to consider before deeming ADONIS to be the ideal complement to the CUHSL's journal collection.

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Received May 1996; accepted November 1996

Internet skills: an analysis of position advertisements 1991–1995

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INTRODUCTION

The Internet is quickly becoming an essential tool in many health sciences libraries, in both public service and technical service departments. A literature search revealed that most of the available material dealing with the Internet and the health sciences library focuses on the use of this tool and instruction in its use. In comparison, few studies focus on the impact of the Internet on the health sciences library.

To explore the Internet's impact on health sciences libraries, position advertisements in *MLA News* were examined. This study examined the demand for Internet skills in health sciences library positions and related it to Internet use within health sciences libraries. The methodology, which began to appear in library science literature in the 1980s, has been used in similar studies to examine the use of new technologies in the profession [1, 2].

METHODOLOGY

Position advertisements placed in *MLA News* between 1991 and 1995 were examined. *MLA News* was selected as the data source because it is a recognized location for advertising health sciences library positions. Positions outside academically or clinically oriented health sciences libraries were eliminated. Duplicate and non-U.S. advertisements were also eliminated.

Each position was coded for Internet skills and library type. Interest in Internet skills was indicated as present only when a direct reference was made to the Internet or an Internet tool (e-mail, File Transfer Protocol, telnet, Gopher, World Wide Web, etc.) A note was made to indicate whether the library advertising the position was academic or clinical in nature. Systat [3] software was used to tabulate the data.

RESULTS

The contents of 522 position advertisements were coded. Overall, the number of positions advertised per year declined. In 1991, there were 137 positions,